OPERATING MANUAL

4112

T1 ERROR DETECTOR

RYCOM
instruments, inc.

RYCOM INSTRUMENTS INC.
9351 East 59th Street
Raytown, Missouri 64133

OPERATING MANUAL
4112
T1 ERROR DETECTOR

Serial No._____

Manual Part No. 030 00025 00

CERTIFICATION

RYCOM Instruments Incorporated certifies that this instrument was thoroughly tested and inspected and found to meet its published specification when it was shipped from the factory.

WARRANTY AND ASSISTANCE

All RYCOM Instruments Inc. products are warranted against defects in material and workmanship. This warranty applies for one year from the date of delivery, or, in the case of certain major components listed below for the specified period. We will repair or replace products that prove to be defective during the warranty period. No other warranty is expressed or implied. We are not liable for consequential damages.

Exceptions to this warranty are dry batteries or Rechargeable batteries which are subject to original manufacturer's inspection and warranty.

This warranty is void if, after having received the instrument in good condition, it is subjected to abuse, unauthorized alteration or unauthorized repair.

Where it is necessary to return the instrument to the factory, furnish information to the nature of trouble encountered. Ship prepaid to:

RYCOM INSTRUMENTS, INC.
9351 East 59th Street
Raytown, Missouri 64133

Attention: Service Department

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CHAPTER 1
GENERAL

1.0 PURPOSE OF MANUAL

1.01 This manual contains operating instructions for the Model 4112 T1 Error Detector. The instrument is illustrated in figure 1-1.

1.1 PURPOSE OF EQUIPMENT

1.1.1 The 4112 T1 Error Detector is a hand held test set which checks for pulses and errors on T1 (1.544 Mbits/sec) pulse code modulation (PCM).

1.2 DESCRIPTION

1.2.1 This unit is an ideal hand held test set due to its compact size, ruggedized packaging, long battery life, and light weight.

Figure 1-1. 4112 T1 Error Detector

1.2.2 The unit is equipped with audio and visual indicators. The audio transducer emits an audible tone when the ERROR light blinks. Two light-emitting diodes (LED's) provide a visual indication of PULSES (green LED) or ERRORS (red LED). A LEVEL selector switch sets the unit for bridging at high level points (HI) or low level points (LO). The INPUT jack accommodates a W.E. 310-type plug and test cord.

1.2.3 Electrical and mechanical characteristics of the unit are summarized in Table 1-1.

Table 1-1. Specifications

CHARACTERISTIC	SPECIFICATION
FUNCTION:	T1 Bridging Error Detector
INPUT SIGNAL:	T1 (1.544 Mbits/s)
OPERATING RANGE FOR DETECTION OF BIPOLAR VIOLATIONS:	HI; -3.5 dB to +2.5 dB (0 dB = 6 V p-p) LO; -6 dB to -36 dB
INPUT IMPEDANCE:	HI and LO; >1000 Ω at 772 kHz
POWER REQUIREMENTS:	6 volts nominal - 4 "AA" cells.
BATTERY LIFE:	8-hours minimum continuous use with NEDA No. 15 (Eveready 1015 or equiv.)

Table 1-1. Specifications (cont)

CHARACTERISTIC	SPECIFICATION
OPERATING TEMPERATURE:	-10 °C to +55 °C
ENCLOSURE:	Height: 1.75 inches (44.5 mm) Width: 3.63 inches (52.1 mm) Depth: 6.38 inches (161.9 mm) Weight: 13 ozs. (0.37 kg)
CONNECTORS:	INPUT jack - accepts type W.E. 310 plug
INDICATORS:	PULSE Indicator - green LED ERROR Indicator - red LED and piezoelectric audio transducer
ACCESSORIES:	W.E. 310 plug to alligator clip patch cord supplied.

CHAPTER 2
OPERATION

2.0 PREPARATION

2.0.1 The unit has been thoroughly inspected at the factory and is covered by Warranty. However; before using the unit, you should inspect it for shipping damage. Report any damage to the carrier and to RYCOM Instruments, Inc.

2.1 OPERATING CONTROLS AND INDICATORS

2.1.1 Figure 2-1 shows the location of the unit's operating controls and indicators. Table 2-1 identifies each item and describes its function.

Table 2-1. Operating Controls and Indicators

Item	Name	Function
1	INPUT Jack	Connector for input signal. Circuit is enabled when plug is inserted.
2	PULSES Indicator	Lights when pulses are present.
3	ERRORS Indicators	Flashing light and audible tone when errors are present.

Table 2-1. Operating Controls and Indicators (cont)

Item	Name	Function
4	LEVEL Selector Switch	Select the range of input levels: LO - Permits bridging at input to repeater and terminal where signal level is significantly attenuated by cable pair. HI - Permits bridging at output of repeater and terminal, where signal level is at or near maximum.

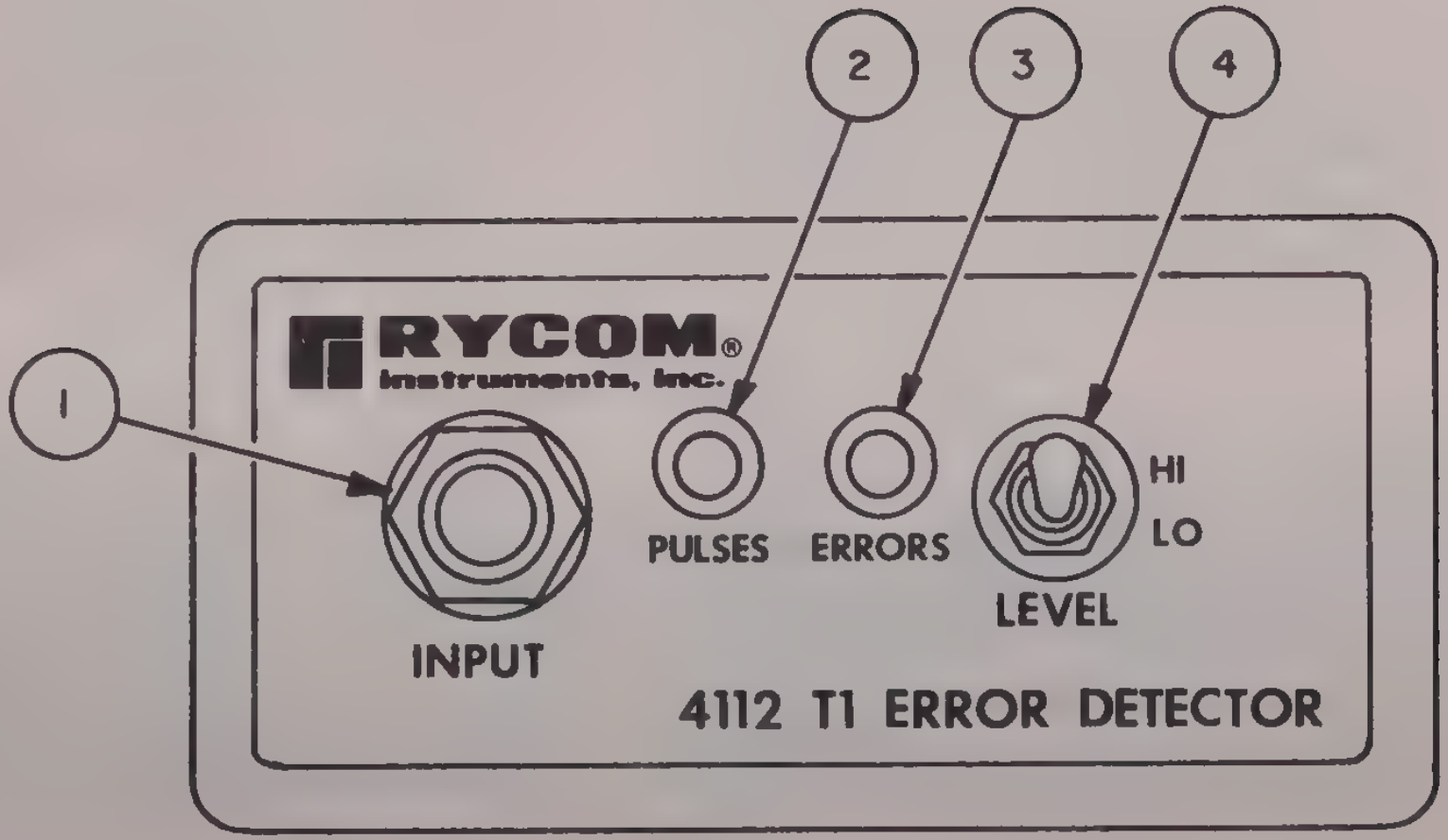

Figure 2-1. Operating Controls and Indicators

2.2 BATTERY REPLACEMENT

2.2.1 To determine if batteries need replaced:

a. Remove the battery cover by sliding it in the direction of the arrow on the cover.

b. Connect a Voltmeter to the battery clips as shown in figure 2-2.

c. Replace the batteries if the voltage is less than 5 VDC with 4 "AA" cells, carbon-zinc or alkaline batteries. Be sure that the (+) and (-) mark on the battery correspond to the (+) and (-) marks in the case.

d. Replace the battery cover.

Figure 2-2. Battery Replacement

2.2.2 Remove the batteries from unit when storing unit for a long time. This prevents the unit from being damaged by possible battery leakage.

2.2.3 Battery life is conservatively rated at 8 hours of continuous use with NEDA No. 15 (Eveready 1015 or equiv.) at 25°C. Battery life and operating temperature characteristics can be extended by using alkaline batteries (Eveready No. E91 cell or equiv.).

2.3 OPERATIONAL CHECK

2.3.1 Insert the patch cord into the INPUT jack to turn the unit on. With the LEVEL selector switch set in HI or LO and no signal applied to the unit, none of the indicators should be on.

2.4 OPERATION

2.4.1 Bridging across line at repeater (or terminal) output figure 2-3.

a. Set LEVEL selector switch to HI.

b. Using the appropriate test cord, connect output of repeater or terminal to INPUT jack.

c. Observe indicators for PULSES or ERRORS. When there are pulses, only the PULSE LED will be on. When there are errors, the PULSE LED will be on and the ERROR LED will be blinking at the error rate.

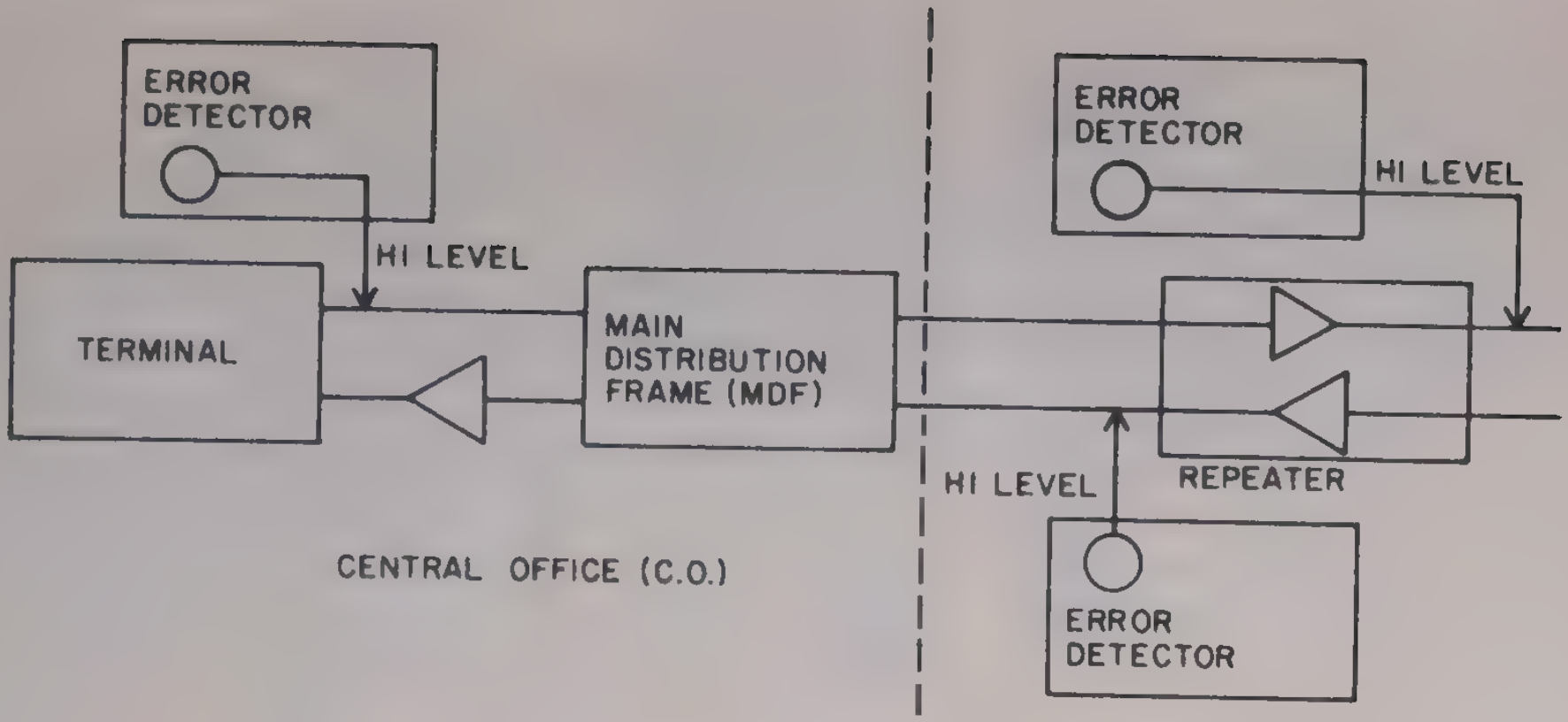

Figure 2-3. Bridging - Repeater Output

2.4.2 Bridging across line at repeater input figure 2-4.

a. Set LEVEL selector switch to LO.

b. Using the appropriate test cord, connect input of repeater or terminal to INPUT jack.

c. Observe indicators for PULSES or ERRORS. When there are pulses, only the PULSE LED will be on. When there are errors, the PULSE LED will be on and the ERROR LED will be blinking at the error rate.

2.5 MAINTENANCE

2.5.1 Operator maintenance of the unit is limited to the operational check (step 2.3) and the replacement of batteries (step 2.2.2).

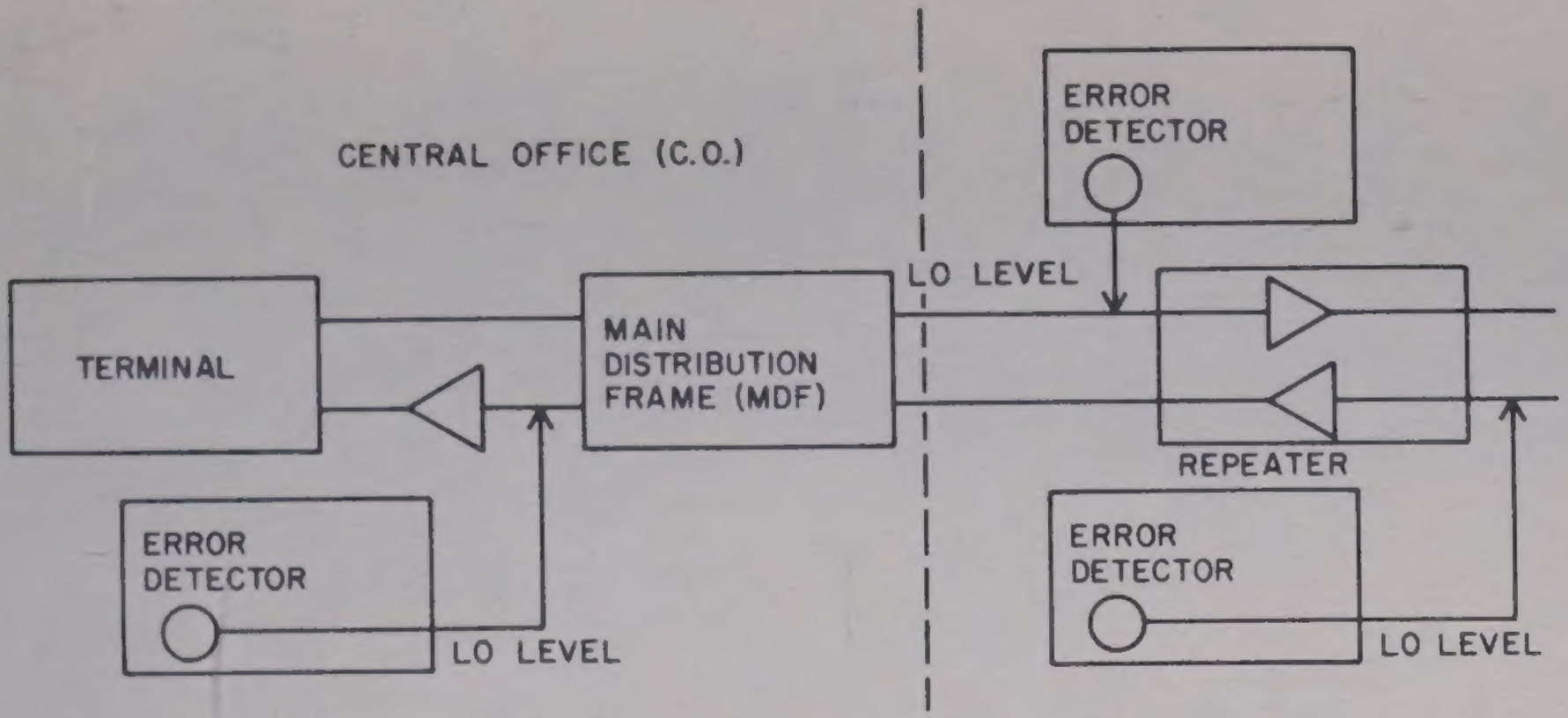

Figure 2-4. Bridging - Repeater Input

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